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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SAAD, ERIN BARRY

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

07/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,963	Applicant(s) PAUL ET AL.	
	Examiner ERIN B. SAAD	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-17, 19-48 and 53-71 is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 8-14, 41-48, 53-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17, 19-23, 29-40, 66 and 67 is/are rejected.
- 7) ☒ Claim(s) 24-28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/24/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 1-6, 8-14, 41-48, 53-65 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected apparatus and method, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 4/29/2009.
2. Applicant's election with traverse of group 1 in the reply filed on 4/29/2009 is acknowledged. The traversal is on the ground(s) that the amended independent claims to include a fluid expansion unit does not read on the prior art. This is not found persuasive because Prior Art, McHerron et al. (6,892,781), discloses the newly amended special technical feature of a fluid engager 42 (figure 4). The independent claims lack unity; therefore, the restriction is proper.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

3. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because figures 2, 4, 16a, 16b, 17, 18, 19, 26, 27, 28, 29, 31, 32, 34, 36b are too dark/black to determine the structure being shown. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings

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are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 67-71 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 67 is indefinite because there is a "base plate" and a "bottom plate". It is unclear if the "bottom plate" and the "base plate" are the same part. For the purpose of examination, the "base plate" is also the "bottom plate".

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 17, 19, 23, 29, 35, and 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by McHerron et al. (6,892,781).

Regarding claim 17, McHerron discloses a method for bonding laminae together to form a device comprising providing a thermally assisted bonding unit comprising an

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engager 36 having at least one fluid expansion unit 42 and bonding laminae 22 together using the device (column 2 lines 24-53 and figure 4).

Regarding claim 19, McHerron discloses a belt/conveyorized furnace (column 4 lines 11-19).

Regarding claim 23, McHerron discloses thermally registering plural lamina using a registration fixture 14 prior to bonding laminae (column 3 line 45 to column 4 line 20).

Regarding claim 29, McHerron discloses that the thermally assisted bonding unit further includes a bottom plate 12, a top plate 16 and where the at least one engager 36 is positioned between the bottom plate and the top plate (figure 4).

Regarding claim 35, McHerron discloses a thermally assisted bonding device 310 and functionally associated laminae 22 with the device. McHerron discloses a belt/conveyorized furnace to continuously bond the laminae (column 4 lines 11-19).

Regarding claim 38, McHerron discloses stacking and registering the laminae on the device (column 3 line 45 to column 4 line 19)

Regarding claim 39, McHerron discloses a thermally assisted registration 14 (column 3 lines 45-67 and figure 4).

Regarding claim 40, McHerron discloses that thermally assisted registration comprises a registration device 18 (column 5 lines 52-67 and figure 4).

8. Claims 17, 29-30 and 67 are rejected under 35 U.S.C. 102(b) as being anticipated by Barry, Jr. et al. (4,689,108).

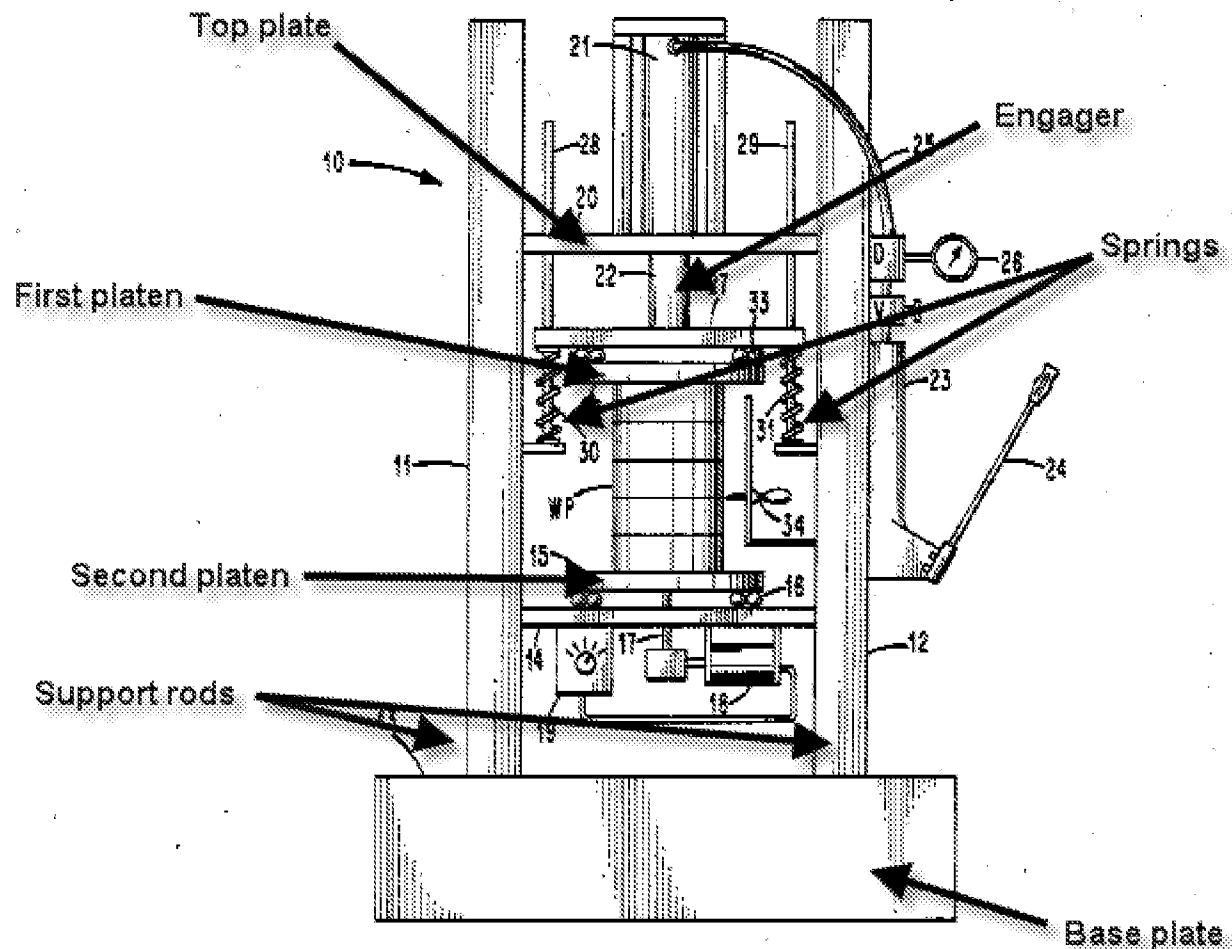
Regarding claim 17, Barry discloses a method for bonding laminae (WP) together to form a device comprising providing a thermally assisted bonding unit comprising an engager 22 having at least one fluid expansion unit and bonding laminae together using the device (column 1 line 46 to column 2 line 55 and figure 1).

Regarding claim 29, Barry discloses that the thermally assisted bonding unit further includes a bottom plate 13, a top plate 20 and where the at least one engager 22 is positioned between the bottom plate and the top plate (column 1 line 46 to column 2 line 55 and figure 1).

Regarding claim 30, Barry discloses that the thermally assisted bonding unit further includes at least one pressure regulating spring 31 positioned between the bottom plate 13 and the at least one engager 22, and where laminae (WP) are positioned between the at least one pressure regulating spring 31 and the at least one engager 22 (column 1 line 46 to column 2 line 55 and figure 1).

Regarding claim 67, Barry discloses that the thermally assisted bonding unit further comprises a frame having a base plate 13, a top plate 20, and support rods 11, 12 positioned between the bases plate and the top plate, the support rods coupling the top plate and bottom plate, with the engager 22 positioned between the base plate and the top plate; and a first platen 32 and a second platen 15 positioned between the at least one engager and the bottom plate, the first platen contacting an upper surface of the laminae and the second platen contacting a lower surface of the laminae (shown below).

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Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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10. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over McHerron et al. (6,892,781), as applied to claim 17 and further in view of Alley et al. (5,232,145).

Regarding claim 20, McHerron does not specifically disclose forced convective heating of the laminae. However, Alley does disclose using forced convective heating with nitrogen (column 4 lines 7-44). To one skilled in the art at the time of the invention it would have been obvious to use forced convective heating with nitrogen to heat the laminae of McHerron because it provides an even heating of the laminae and is easily controlled by the user (column 44-68).

Regarding claim 21, McHerron does not specifically disclose using an inert gas in the furnace. However, Alley does disclose using an inert gas (column 4 lines 7-48). To one skilled in the art at the time of the invention it would have been obvious to use an inert gas furnace because Alley discloses that it is a well known gas to use in a solder furnace (column 4 lines 7-48) and prevents oxidation of the workpieces during bonding.

Regarding claim 22, McHerron does not disclose gas in the heater/oven. However, Alley does disclose a cover gas in the oven (column 4 lines 7-48). While Alley does not specifically disclose that the gas is contained in the system, it would be obvious to one skilled in the art at the time of the invention that the gas would be contained in the oven of Alley since the oven is covered and Alley discloses that the gas flow is controlled in the oven (column 5 lines 44-68).

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11. Claim 30-33 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over McHerron et al. (6,892,781) as applied to claim 29 above, and further in view of Callahan et al. (2005/0007748).

Regarding claim 30, McHerron does not specifically disclose that the bonding unit further includes at least one pressure regulating spring position between the bottom plate and the at least one engager, and where laminae are positioned between the at least one pressure regulating spring and the at least one engager. However, Callahan does disclose a pressure regulating spring 24 for a unit for holding circuit pieces/laminae together where the laminae is located between the spring and the top plate (figure 3. To one skilled in the art at the time of the invention it would have been obvious to use a pressure regulating spring in the unit of McHerron because Callahan discloses that it distributes the compressive forces to create an even press (paragraphs 0004-0006).

Regarding claim 31, McHerron does not specifically disclose that the bonding laminae comprises applying bonding pressure stored in the at least one spring to the laminae. However, the spring 24 of Callahan would apply pressure stored in the spring to the laminae. To one skilled in the art at the time of the invention it would have been obvious to use the spring of Callahan to apply bonding pressure stored in the at least one spring to the laminae of McHerron to distribute the compressive forces to create an even press (paragraphs 0004-0006).

Regarding claim 32, McHerron discloses that that the heat causes the engager 36 to expand relative to the top plate 16 and the bottom plate 12 such that a given time

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after heating, the engager engages both the top plate and the laminae 22 (column 6 lines 10-40 and figure 4).

Regarding claim 33, McHerron does not disclose that when the engager engages both the top plate and the laminae, final bonding pressure stored in the at least one spring is applied to the laminae. However, Callahan does disclose a spring that when used in the unit of McHerron would apply pressure stored in the spring to the laminae. To one skilled in the art at the time of the invention it would have been obvious to use the spring of Callahan to apply bonding pressure stored in the at least one spring to the laminae of McHerron to distribute the compressive forces to create an even press (paragraphs 0004-0006). It also would have been obvious that when the engager is heated and applies pressure to the laminae, the spring (located below the laminae) is going to have pressure stored and will press against the laminae.

Regarding claim 66, McHerron does not disclose at least one pressure regulating spring functionally associated with the unit to apply pressure to the laminae. However, Callahan does disclose a pressure regulating spring 24 for a unit for holding circuit pieces/laminae together where the laminae is located between the spring and the top plate (figure 3). To one skilled in the art at the time of the invention it would have been obvious to use a pressure regulating spring in the unit of McHerron because Callahan discloses that it distributes the compressive forces to create an even press (paragraphs 0004-0006).

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12. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over McHerron et al. (6,892,781) as applied to claim 17.

Regarding claim 34, McHerron does not specifically disclose prebonding a first stack of at least two laminae and prebonding a second stack of at least two laminae, the first stack and the second stack being subsequently bonded together. However, selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results; *In re Gibson*, 39 F.2d 975, 5USPQ 230 (CCPA 1930) (MPEP 2144). To one skilled in the art at the time of the invention it would have been obvious to bond the laminae in a sequence suitable to create a desirable end product.

13. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over McHerron et al. (6,892,781) in view of Alley et al. (5,232,145).

Regarding claim 36, McHerron does not specifically disclose forced convective heating of the laminae. However, Alley does disclose using forced convective heating with gas (column 4 lines 7-44). To one skilled in the art at the time of the invention it would have been obvious to use forced convective heating with nitrogen to heat the laminae of McHerron because it provides an even heating of the laminae and is easily controlled by the user (column 44-68).

Regarding claim 37, McHerron does not specifically disclose using an inert gas in the furnace. However, Alley does disclose using an inert gas (column 4 lines 7-48). To one skilled in the art at the time of the invention it would have been obvious to use an

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inert gas furnace because Alley discloses that it is a well known gas to use in a solder furnace (column 4 lines 7-48) and prevents oxidation of the workpieces during bonding.

Allowable Subject Matter

14. Claims 24-28 and 68-71 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 24, the Prior Art, McHerron, discloses a registration fixture 14 (figure 14). McHerron fails to teach or suggest a registration fixture that includes a flexible laminae engagement portions that flex when displaced by expanding laminae. There is no motivation or teaching to incorporate a flexible laminae engagement portions that flex when displaced by expanding laminae.

Claims 25-28 are dependent on claim 24.

Regarding claim 68, while Prior Art, Barry, Jr., discloses a load stage 14 positioned between the second platen 15 and the bottom/base plate 13, there is no teaching or suggestion for a spring to be positioned between the load stage and the bottom/base plate. While Prior Art Callahan discloses a spring 24 located under the lamina 14-17, there would be no motivation to place the spring of Callahan in the bonding unit of Barry, Jr. It would not have been obvious to place the spring of Callahan in a location between the load stage and the bottom/base plate of Barry, Jr. because the control 19 and speed motor 18 are located and attached under the load

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stage. Placing a spring under the load stage of Barry, Jr would have no influence on the bonding of the laminae between the platens.

The Prior Art, McHerron does not disclose a load stage, a second platen or a spring. It would not have been obvious place the spring of Callahan into the system of McHerron because McHerron does not disclose the load stage. There is no motivation for incorporating a load stage or spring into McHerron since the arrangement of McHerron uses screws 19 to hold the bottom/base plate and the top plate 16 together to apply pressure created solely by thermal expansion (abstract).

Claims 69-71 are dependent on claim 68.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIN B. SAAD whose telephone number is (571)270-3634. The examiner can normally be reached on Monday through Thursday from 8am-5pm Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. B. S./
Examiner, Art Unit 1793
7/14/2009

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793